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Date: October 18, 2006/Jessica Sexton/  
Jessica Sexton**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re patent application of:

Appellants: Yun Lin, *et al.*

Examiner: Hanh B. Thai

Serial No: 10/692,212

Art Unit: 2163

Filing Date: October 23, 2003

Title: PERSISTENT CACHING DIRECTORY LEVEL SUPPORT

**Mail Stop Appeal Brief-Patents**  
**Commissioner for Patents**  
**P.O. Box 1450**  
**Alexandria, VA 22313-1450**

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**APPEAL BRIEF**

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Dear Sir:

Appellants' submits this brief in connection with an appeal of the above-identified patent application. Payment is being submitted via credit card in connection with all fees due regarding this appeal brief. In the event any additional fees may be due and/or are not covered by the credit card, the Commissioner is authorized to charge such fees to Deposit Account No. 50-1063 [MSFTP527US].

**I. Real Party in Interest (37 C.F.R. §41.37(c)(1)(i))**

The real party in interest in the present appeal is Microsoft Corporation, the assignee of the present application.

**II. Related Appeals and Interferences (37 C.F.R. §41.37(c)(1)(ii))**

Appellants, appellants' legal representative, and/or the assignee of the present application are not aware of any appeals or interferences which may be related to, will directly affect, or be directly affected by or have a bearing on the Board's decision in the pending appeal.

**III. Status of Claims (37 C.F.R. §41.37(c)(1)(iii))**

Claims 1, 3-22, 24, 25, 36, 37, 39 and 40 stand rejected by the Examiner. The rejection of claims 1, 3-5, 7-16, 18-22, 24, 25, 36, 37, 39 and 40 is being appealed. Claims 26-35, 41 and 42 stand withdrawn, and claims 3, 23, 38 and 43 have been cancelled.

**IV. Status of Amendments (37 C.F.R. §41.37(c)(1)(iv))**

The Examiner has not entered the amendments submitted after the Final Office Action. (See Advisory Action from Examiner dated Aug. 7, 2006).

**V. Summary of Claimed Subject Matter (37 C.F.R. §41.37(c)(1)(v))****A. Independent claim 1**

Independent claim 1 recites a remote file system (200) that comprises one or more surrogate providers (230, 240) comprising at least a first surrogate provider that is a client side caching (CSC) component (230). The CSC component (230) selectively caches at least a subset of data from at least one online server and supports connection state transitions at the directory level on a logical namespace. The system further comprises one or more client computers that receive and store the subset of data to their respective local databases for offline use by the respective client computers to facilitate a seamless operation of data retrieval across connectivity states for a user, the offline use is limited to shares of the logical namespace that are experiencing a period of disconnect. (See *e.g.* Figure 2, and corresponding text, page 10, line 14 – page 12, line 2; and page 7, line 29 – page 8, line 23).

**B. Independent claim 21**

Independent claim 21 recites a method that facilitates maintaining access to remote files (*e.g.*, server-based) during any period of disconnect from a remote location. The subject invention provides a seamless operation of data retrieval across connectivity states *via* a method that initially comprises providing one or more client computers, wherein each client computer comprising a local data store. At 1120, the method further comprises selectively caching one or more file objects and a logical namespace associated with the one or more file objects from at least one online server to the respective data store for subsequent offline use by the client computer (1130), the offline use is limited to portions of the logical namespace that are involved in a period of disconnect. (*See e.g.* Figure 11, and corresponding text at page 55, line 11 – page 56, line 4).

**C. Independent claim 36**

Independent claim 36 provides a system that facilitates maintaining access to remote files (*e.g.*, server-based) during any period of disconnect from a remote location. The subject invention provides a seamless operation of data retrieval across connectivity states *via* a system that comprises means for providing one or more client computers, each client computer comprising a local data store (*See e.g.* Figure 11, and corresponding text at page 55, lines 11-16); means for selectively caching one or more file objects and logical namespaces associated with the file objects from at least one online server to the respective data store for subsequent offline use by the client computer (*See e.g.* Figure 11, and corresponding text at page 55, lines 16-25); and means for limiting offline processing to those shares of the logical namespaces associated with the one or more file objects that are experiencing a period of disconnect. (*See e.g.* Figure 1, and corresponding text at page 9, line 24 – page 10 line 8).

The aforementioned means for limitations are identified as claim elements subject to the provisions of 35 U.S.C. §112 ¶6. The corresponding structures are identified with reference to the specification and drawings in the parentheticals above corresponding to those claim limitations.

**VI. Grounds of Rejection to be Reviewed on Appeal (37 C.F.R. §41.37(c)(1)(vi))**

**A.** Whether claims 1, 3-5, 7-16, 18-22, 24, 25, 36, 37, 39 and 40 are unpatentable under 35 U.S.C. §103(a) over Domensikos *et al.* (US 6,065,043) in view of Murphy *et al.* (US 6,096,096).

**B.** Whether claim 6 and 17 are unpatentable under 35 U.S.C. §103(a) over Domensikos *et al.*, in view of Murphy *et al.* and further in view of Shaw *et al.* (US 2002/0083148).

**VII. Argument (37 C.F.R. §41.37(c)(1)(vii))**

**A. Rejection of Claims 1, 3-5, 7-16, 18-22, 24-25, 36, 37, 39 and 40 Under 35 U.S.C. §103(a)**

Claims 1, 3-5, 7-16, 18-22, 24, 25, 36, 37, 39 and 40 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Domensikos *et al.* (US 6,065,043) in view of Murphy *et al.* (US 6,096,096). Reversal of this rejection is respectfully requested for at least the following reasons. The cited references, either alone or in combination, fail to teach or suggest all limitations of the subject claims.

To reject claims in an application under §103, an examiner must establish a *prima facie* case of obviousness. A *prima facie* case of obviousness is established by a showing of three basic criteria. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second there must be a reasonable expectation of success. Finally, ***the prior art reference (or references when combined) must teach or suggest all the claim limitations.*** See MPEP §706.02(j). The teaching or suggestion to make the claimed combination and the reasonable expectation of success must be found in the prior art and not based on the applicant's disclosure. See *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). (emphasis added).

The claimed invention relates to a client side caching infrastructure that facilitates seamless operation across connectivity states between computers across a network. In particular,

independent claim 1 recites a remote file system, comprising one or more surrogate providers comprising at least a first surrogate provider that is a client side caching component that selectively caches at least a subset of data from at least one online server and supports connection state transitions at the directory level on a logical namespace; and one or more client computers that receive and store the subset of data to their respective local databases for offline use by the respective client computers to facilitate a seamless operation of data retrieval across connectivity states for a user, ***the offline use is limited to shares of the logical namespace that are experiencing a period of disconnect.*** Independent claims 21 and 36 recite similar aspects. Domensikos *et al.* and Murphy *et al.* do not teach or suggest such features of the subject claims.

Domensikos *et al.* provides for client computers to connect to a server of an Internet site and execute applications stored on a memory device linked to the server. At page 3 of the Final Office Action, the Examiner concedes that Domensikos *et al.* is silent regarding one or more client computers that receive and store the subset of data to facilitate a seamless operation of data retrieval across connectivity states for a user, ***the offline use is limited to shares of the logical namespace that are experiencing a period of disconnect*** as afforded by the claimed invention.

The Examiner attempts to compensate for the aforementioned deficiencies of Domensikos *et al.* with Murphy *et al.* Murphy *et al.* teaches emulating online access of information in an off-line environment. At page 3 of the Final Office Action, the Examiner contends that Murphy *et al.* teaches a system where the offline client is configured to cache only the shares of the logical namespace that are experiencing a period of disconnect, as afforded by the claimed invention – appellants’ representative respectfully disagrees. At the indicated portions, Murphy *et al.* discloses storing information from an entire web site onto a portable storage medium. The stored information includes all documents linked to the website and corresponding virtual document roots. However, nowhere does the reference limit offline data access to specific shares of a single logical namespace that are experiencing a period of disconnect. Rather, Murphy *et al.* provides a system for navigating an entire website while offline without contemplating allowing online access of data associated with shares of a logical namespace that are not experiencing a period of disconnect and limiting offline access of data associated with ***shares of the logical namespace that are experiencing a period of disconnect***, as in the claimed invention. In particular, for example, if only one share of a logical namespace is experiencing a period of disconnect, Murphy *et al.* does not teach or suggest that offline data

access is restricted to the data associated with the one offline share of the namespace while data associated with the remaining shares of the namespace that are not experiencing a period of disconnect are still accessed online by a user. Rather, the cited reference stores the entire contents of the website on a storage medium for subsequent offline access. Consequently, Murphy *et al.* is silent regarding one or more client computers that receive and store the subset of data to their respective local databases for offline use by the respective client computers to facilitate a seamless operation of data retrieval across connectivity states for a user, the offline use *limited to shares of the logical namespace that are experiencing a period of disconnect*, as recited in independent claims 1, 21 and 36.

In view of at least the foregoing, it is readily apparent that Domensikos *et al.* and Murphy *et al.*, considered individually or in combination, fail to teach or suggest all aspects of the subject claims. Accordingly, this rejection should be reversed.

**B. Rejection of Claims 6 and 17 Under 35 U.S.C. §103(a)**

Claims 6 and 17 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Domensikos *et al.*, in view of Murphy *et al.* and further in view of Shaw *et al.* (US 2002/0083148). Appellants' representative respectfully requests that this rejection should be reversed for at least the following reasons. The subject claims depend from independent claim 1. As discussed *supra*, Domensikos *et al.* and Murphy *et al.*, individually or in combination, do not teach or suggest each and every element set forth in claim 1, and Shaw *et al.* does not make up for the aforementioned deficiencies of the primary references. Therefore, this rejection should be reversed.

**C. Conclusion**

For at least the above reasons, the claims currently under consideration are believed to be patentable over the cited references. Accordingly, it is respectfully requested that the rejections of claims 1, 3-22, 24, 25, 36, 37, 39 and 40 be reversed.

If any additional fees are due in connection with this document, the Commissioner is authorized to charge those fees to Deposit Account No. 50-1063 [MSFTP527US].

Respectfully submitted,  
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**VIII. Claims Appendix (37 C.F.R. §41.37(c)(1)(viii))**

1. A remote file system, comprising:  
one or more surrogate providers comprising at least a first surrogate provider that is a client side caching (CSC) component that selectively caches at least a subset of data from at least one online server and supports connection state transitions at the directory level on a logical namespace; and  
one or more client computers that receive and store the subset of data to their respective local databases for offline use by the respective client computers to facilitate a seamless operation of data retrieval across connectivity states for a user, the offline use is limited to shares of the logical namespace that are experiencing a period of disconnect.
2. (Cancelled)
3. The system of claim 1, further comprising a MUP that supports the one or more surrogate providers at the directory level to handle incoming requests from a user.
4. The system of claim 1, further comprising a second surrogate provider that translates a logical path into a physical path.
5. The system of claim 4, the second surrogate provider is a DFS component that points to at least one physical share or at least one physical server.
6. The system of claim 1, selectively caching comprises automatic caching and manual caching based at least in part upon user preferences.
7. The system of claim 1, the data comprises file access parameters comprising at least one of object access rights and share access rights, the file access parameters corresponding to a cached file object.



8. The system of claim 1, the CSC component caches the logical namespace of a file request such that when accessed during an offline state, the file is presented to a user as if it resides at a remote server location.
9. The system of claim 1, the CSC component maintains connection based data structures in logical namespace, the data structures comprising a server connection structure (SrvCall), a share mapping structure (NetRoot), and a per-user share mapping structure (VNetRoot) to facilitate handling at least one of create, read, and write requests.
10. The system of claim 1, the CSC component creates file based data structures and shares the data structures with one or more redirectors to facilitate handling at least one of create, read, and write requests, the one or more redirectors operatively connected to one or more network providers.
11. The system of claim 1, the first surrogate provider comprises a pre-process handler and a post-process handler which facilitates responding to any one of create, read, and write requests.
12. The system of claim 1, the surrogate providers determine who owns a path request whereby the CSC components makes an initial determination before allowing the DFS component to examine the path to identify any DFS links.
13. The system of claim 12, the CSC component operates cooperatively with the DFS component to determine whether DFS links are present in the path while in an online connection state.
14. The system of claim 1, the CSC component determines whether to cache an object file associated with the path.
15. The system of claim 1, further comprising a CSC agent pings the server to determine whether the server is online.

16. The system of claim 1, the CSC component tracking substantially all DFS links included in the logical namespace persistently to transition a connection state at a proper logical directory which facilitates minimizing a scope of offlineness to a physical share.
17. The system of claim 1, the server broadcasts to substantially all CSC agents that it is online to mitigate latency.
18. The system of claim 1, the client computer accesses remote files offline by retrieving them from their respective local databases if file access parameters are satisfied.
19. The system of claim 1, the first surrogate provider keeps track of DFS links corresponding to every object, wherein the DFS links are physical shares.
20. The system of claim 1, the first surrogate provider determines whether the request against a specific object should be carried out offline or not, before returning to MUP, by looking at a corresponding physical share connection state.
21. A method that facilitates maintaining access to remote files (*e.g.*, server-based) during any period of disconnect from a remote location, comprising:
  - providing one or more client computers, each client computer comprising a local data store; and
  - selectively caching one or more file objects and a logical namespace associated with the one or more file objects from at least one online server to the respective data store for subsequent offline use by the client computer, the offline use is limited to portions of the logical namespace that are involved in a period of disconnect.
22. The method of claim 21, further comprising maintaining access to the one or more files cached while offline.
23. (Cancelled)

24. The method of claim 21, when connected to the remote location, retrieving a file object from the local data store to mitigate bandwidth usage with respect to accessing the remote location despite being connected to the remote location.

25. The method of claim 21, further comprising:

mapping the logical namespace to a physical namespace to facilitate keeping track of cached files and enumerating directories as files are modified or deleted locally at the client or at the remote location; and

tracking connection states and version of physical shares that correspond to at least one object along a path that facilitates updating a tree connect structure in a continuous manner.

26. (Withdrawn) A method that facilitates seamless operation across connectivity states between at least one client and at least one remote server, comprising:

providing at least a first surrogate provider that receives one or more I/O requests from an MUP, the first surrogate provider comprising a pre-process handler and a post-process handler that facilitate handling the requests at a directory level, the first surrogate provider examining a logical path of the request; and

passing the one or more requests to a second surrogate provider that is operational in an online state, the second surrogate provider translating the logical path of the request into a physical path; and

generating one or more data structures for each respective I/O request that facilitates determining whether the first surrogate provider wants to own or cache a file object related to the request.

27. (Withdrawn) The method of claim 26, further comprising:  
processing the request using the pre-process handler to determine whether the request was handled by at least one of a network provider and the first surrogate provider;  
optionally calling the post-process handler after the request is handled to handle the request again;  
optionally passing the request to a second surrogate provider, the second surrogate provider examines the request and maps the request path to a physical path at the directory level;  
and  
optionally passing the request to one or more redirectors to allow the one or more redirectors to claim ownership of a file object requested.
28. (Withdrawn) The method of claim 26, the request is a create request.
29. (Withdrawn) The method of claim 26, the first surrogate provider is a CSC component and the second surrogate provider is a DFS component, the DFS identifying DFS links in cooperation with the CSC component only while online.
30. (Withdrawn) The method of claim 26, the request being one of a read and a write operation request.
31. (Withdrawn) The method of claim 30, the first surrogate provider is provided with a buffering state of a file before substantially every read from a persistent cache to a client application or before substantially every write is executed, respectively.
32. (Withdrawn) The method of claim 26, employing the first surrogate provider to keep track of DFS links corresponding to every object, wherein the DFS links are physical shares.
33. (Withdrawn) The method of claim 26, employing the first surrogate provider to determine whether the request against a specific object should be carried out offline or not, before returning to MUP, by looking at a corresponding physical share connection state.

34. (Withdrawn) An API that facilitates satisfying a create request on an online remote file system comprising:

- receive the create request from I/O manager;
- call a pre-process handler of a CSC surrogate provider;
- find or create a logical namespace structure if part of the logical namespace on which a target of the create request resides is already offline;
- pass the create request to a DFS surrogate provider to translate the logical path to an physical server share;
- pass the create request to a redirector component to allow a redirector to claim the physical path; and
- call a post-process handler of the CSC surrogate provider to express one of either no interest or interest to cache a file object requested by the create request.

35. (Withdrawn) An API that facilitates satisfying a create request on a client computer when disconnected from a remote file system comprising:

- receive the create request from I/O manager; and
- call a pre-process handler of a CSC surrogate provider to handle the request by mapping the logical path to local cache data since redirectors are unavailable to claim the path.

36. A system that facilitates maintaining access to remote files (*e.g.*, server-based)-during any period of disconnect from a remote location, comprising:

- means for providing one or more client computers, each client computer comprising a local data store; and
- means for selectively caching one or more file objects and logical namespaces associated with the file objects from at least one online server to the respective data store for subsequent offline use by the client computer; and
- means for limiting offline processing to those shares of the logical namespaces associated with the one or more file objects that are experiencing a period of disconnect.

37. The system of claim 36, further comprising means for maintaining access to the one or more files cached while offline.

38. (Cancelled)

39. The system of claim 36, when connected to the remote location, means for retrieving a file object from the local data store to mitigate bandwidth usage with respect to accessing the remote location despite being connected to the remote location.

40. The system of claim 36, further comprising:

means for mapping a logical namespace to a physical namespace to facilitate keeping track of cached files and enumerating directories as files are modified or deleted locally at the client or at the remote location; and

means for tracking connection states and version of physical shares that correspond to at least one object along a path that facilitates updating a tree connect structure in a continuous manner.

41. (Withdrawn) A system that facilitates seamless operation across connectivity states between at least one client and at least one remote server, comprising:

means for providing at least a first surrogate provider that receives one or more I/O requests from an MUP, the first surrogate provider comprising a pre-process handler and a post-process handler that facilitate handling the requests at a directory level, the first surrogate provider examining a logical path of the request; and

means for passing the one or more requests to a second surrogate provider that is operational in an online state, the second surrogate provider translating the logical path of the request into a physical path; and

means for generating one or more data structures for each respective I/O request that facilitates determining whether the first surrogate provider wants to own or cache a file object related to the request.

42. (Withdrawn) A data packet adapted to be transmitted between two or more computer processes facilitating extracting data from messages, the data packet comprising:

information associated with providing one or more client computers, each client computer comprising a local data store, selectively caching one or more file objects from at least one online server to the respective data store for subsequent offline use by the caching one of more file access parameters that correspond to the one or more cached file objects to permit client access to the file objects while offline in connection with seamless connection state transitions at a directory level.

43. (Cancelled)

**IX. Evidence Appendix (37 C.F.R. §41.37(c)(1)(ix))**

None.

**X. Related Proceedings Appendix (37 C.F.R. §41.37(c)(1)(x))**

None.